

EXTREME HYBRID LIQUID COOLING ENCLOSURE

LQ1000

User's Manual

ENGLISH



ZALMAN
WWW.ZALMAN.COM

English Version

Visit our website and watch the Z-Machine LQ1000 installation video for an installation overview.

- ※ Please read this manual thoroughly before installation.
- ※ The specifications of this product and its components may change without prior notice to improve performance.

Notes

Installation Notes

1. Check the condition of the product and its components before installation. If there is a problem with the product and/or its components, please contact the retailer for replacement.
2. Keep this unit away from heat sources such as direct sunlight, as well as from water, oil, and humidity. Place the unit on a flat, stable, and well-ventilated area.
3. Do not drop or subject the unit to excessive force.
4. Do not mix any contaminants with the coolant when filling. It may cause product failure or corrosion.
5. Check the manual when connecting cables. Incorrect connections can lead to fire resulting from short circuiting.
6. Check for leaks on the Water Blocks and Tubes before installation.
7. Preparing the necessary tools (Needle-Nose Pliers, Scissors) will ease the installation process.

Operational Notes

1. Check to see if the DC cables are properly connected before use.
2. Avoid inserting any objects into the system while the power is ON. It may be harmful for the user and product.
3. If the coolant is not circulating properly or if the pump's flow rate becomes too low for other reasons, the red LED will begin to flicker with an alarm sound. Immediately turn the system OFF and contact the place of purchase.
4. Must use the provided coolant. Regularly check the amount of coolant and replenish as needed (replacement cycle of the ZM-G300 coolant is 1 year).
5. If a leak is found, turn off the system immediately and contact the place of purchase.
6. Do not block the Air Ducts on either side of the product. This can lead to fan failure, increased noise, or a decrease in product performance.
7. Make sure that the Water Pump is functioning properly.

Disclaimer

Zalman Tech Co., Ltd. is not responsible for any damages due to external causes, including but not limited to, improper use, problems with electrical power, accident, neglect, alteration, repair, improper installation, or improper testing.

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1. Specifications

Enclosure

Dimensions (L x W x H)	480mm X 220mm X 450mm
Weight	15kg (33lb)
Material	Aluminum Alloy
Motherboard Compatibility	Standard ATX / microATX
PSU Compatibility	Standard ATX / ATX12V
PCI/AGP Card Compatibility	Full Size
Drive Bays	3.5" Bay x 5, 5.25" Bay x 4
Front I/O Port	USB Port x 2, IEEE1394(Firewire) Port x 1 Headphones x 1, MIC x 1

Water Tank (Reservoir)

Dimensions (L x W x H)	125mm X 172mm X 26mm
Weight	800g
Material	Aluminum Alloy, Acrylic
Coolant Capacity	Max. 300cc

Water Pump

Power Consumption	6W, DC 12V
Maximum Flow Rate	300l/hr
Maximum Lift	1.8m

220mm Fan

Dimensions (L x W x H)	220(L) x 220(W) x 30(H) mm
Bearing Type	2 Ball - Bearing
Fan Speed (Min ~ Max)	550rpm $\pm$ 10% ~ 850rpm $\pm$ 10%

CPU Water Block (ZM-WB5)

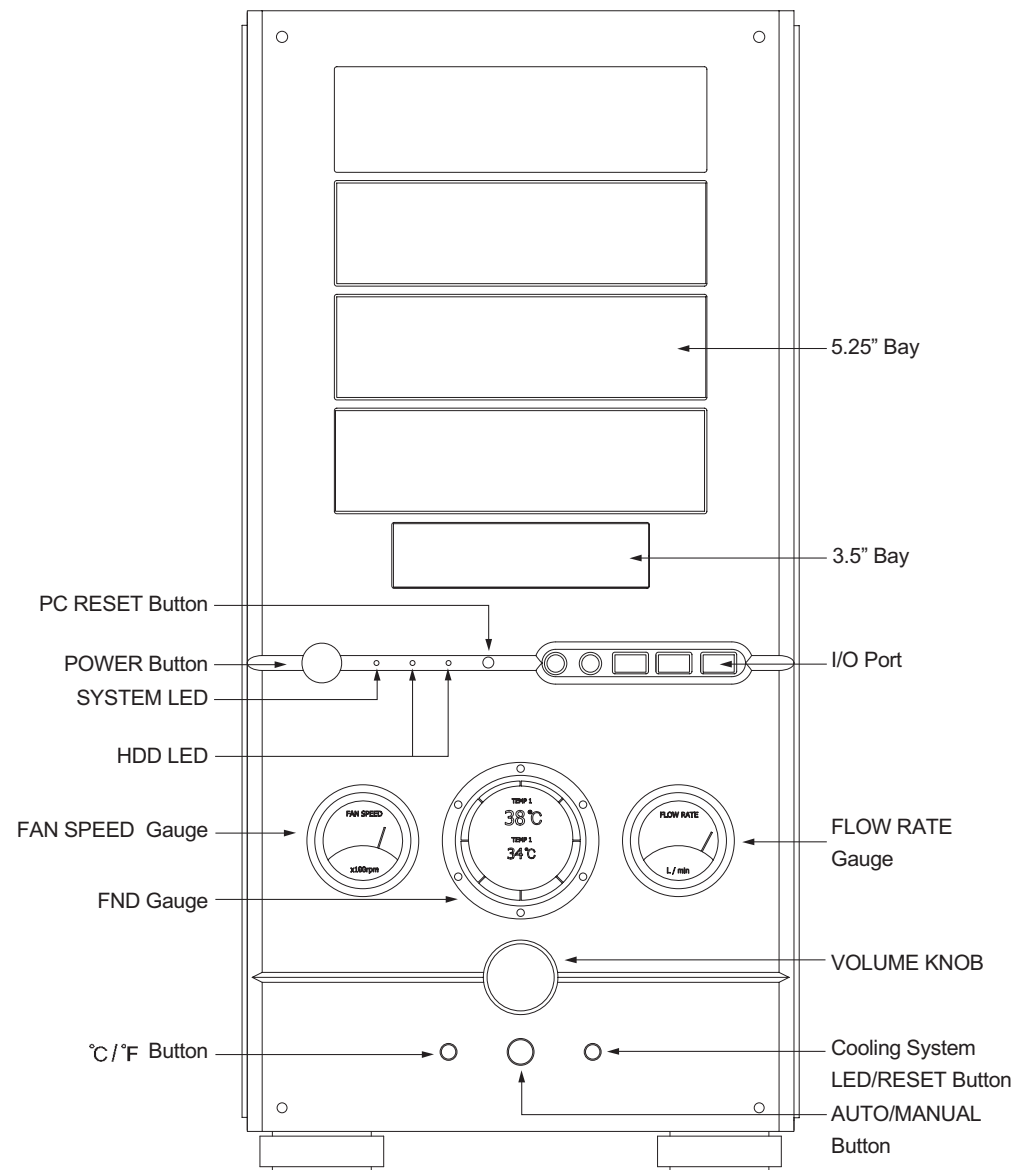
Dimensions (L x W x H)	63(L) x 63(W) x 40(H) mm
Weight	160g
Material	Cover (Aluminum Alloy), Base (Pure Copper)

Coolant (ZM-G300)

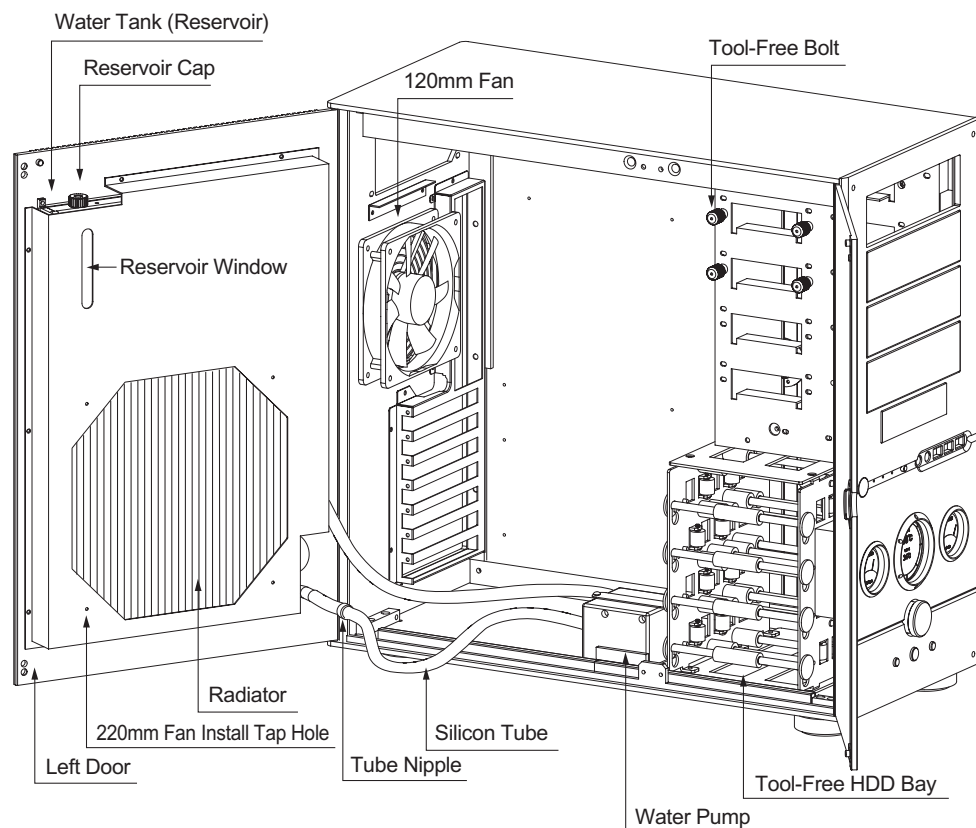
Material	Propylene Glycol & Anti-Corrosion Agent
Volume	250cc
Freezing Point	-9 °C
Replacement Cycle	1 Year

2. Parts List

2.1 Front View

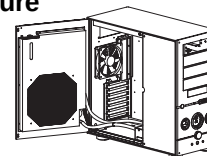


2.2 Side View

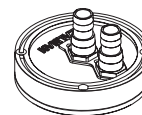


3. Components

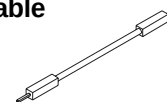
(1) Enclosure



(2) CPU Water Block (ZM-WB5)



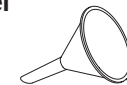
(3) Jump Cable



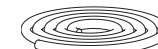
(4) Anti-Corrosion Coolant (ZM-G300)



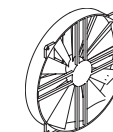
(5) Funnel



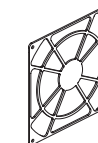
(6) Silicone Tube (1m)



(7) 220mm LED Fan



(8) 220mm LED Fan Grill



(9) User's Manual



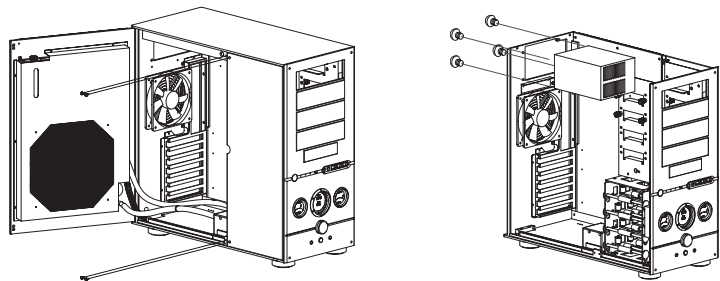
(10) Bolt Parts

Diagram	Part Name	Specifications	Qty.	Application
	L Wrench	3mm	1	Assembly
	Allen Screw	M4 * 8	4	Outer Chassis
	Optional Fan Stand Off	M3 * 28 * (+)3 * (-)3	4	Optional Fan Install
	M/B Stand Off	M3 * 10 * (+)3 * (-)3	12	M/B Installation
	PSU Screws	PH #6-32 * 10	6	PSU Installation
	ODD, M/B Screws	PWH, M3 * 5	24	ODD, M/B Installation
	Fan Fixing Bolt	PWH, M3 * 10	4	220mm Fan Installation
	Hand Bolt	P9 * 15.4	4	HDD Installation

4. Installation Guide

4.1 Power Supply Installation

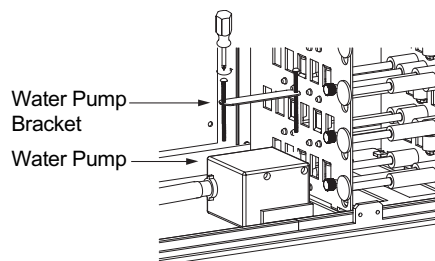
Unscrew the four Bolts (Bolt, FH M3x6) as shown in the diagram to open the Doors.
Place the PSU on the Power Bracket, and screw the four Bolts (Bolt, PHM #6-32 * 10 (Black)) from outside the enclosure.



4.2 Pump Bracket Removal

To prevent damage to the unit during transport, the Pump Bracket is removed.

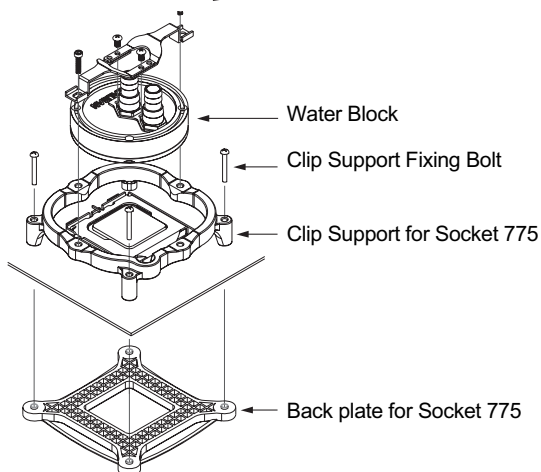
Note) The Pump Bracket can cause unwanted noise if not removed.



4.3 CPU Water Block(ZM-WB5) Guide Install

Before installing the motherboard, please refer to ZM-WB5's manual for correct socket installation procedures.

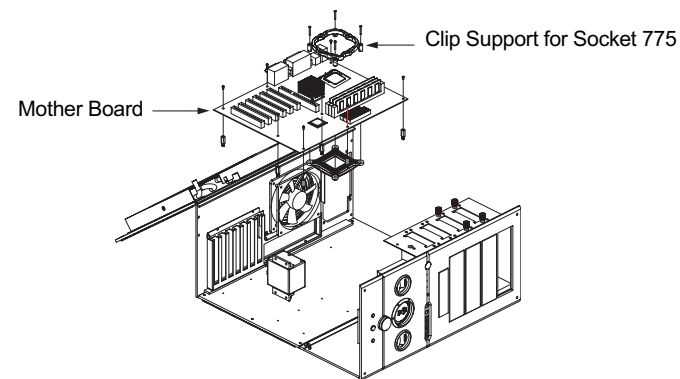
Note) Intel CPU users: please refer to the CPU waterblock's manual for installation



ex) Intel Pentium 4 (Socket 775) installation

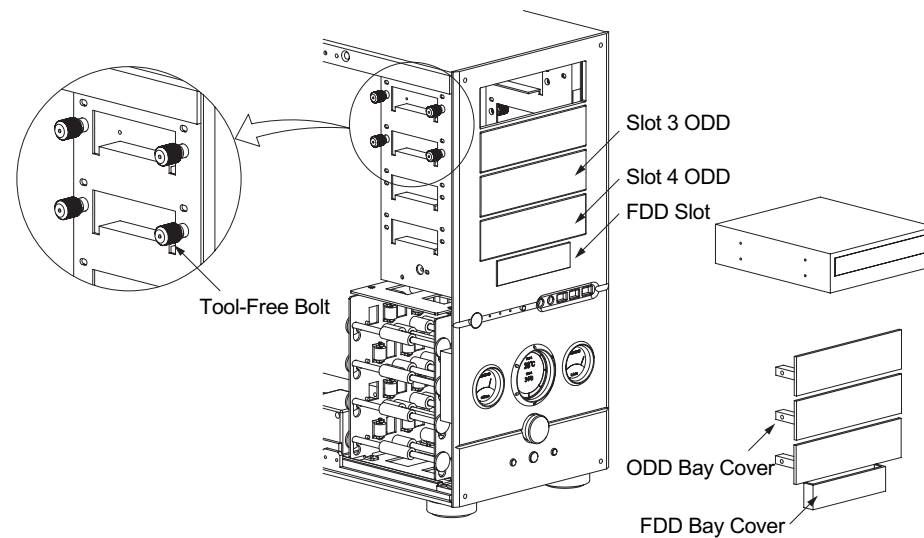
4.4 Motherboard Installation

Secure the motherboard to the enclosure, then, install components (CPU, VGA, RAM, etc.) onto the motherboard.

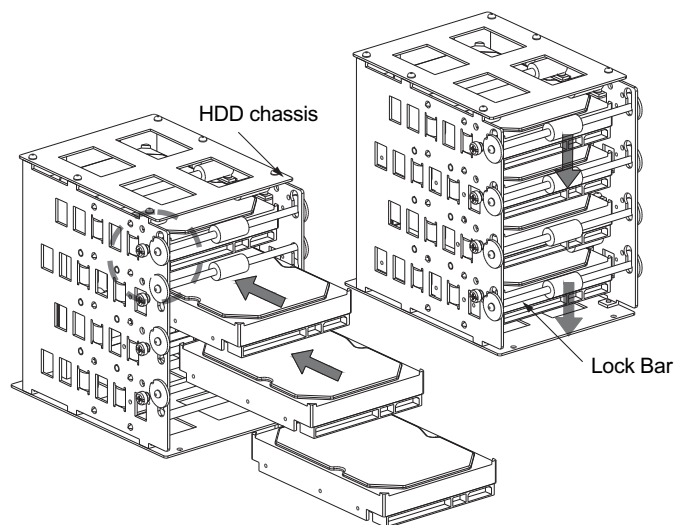


4.5 3.5"/5.25" Drive Installation

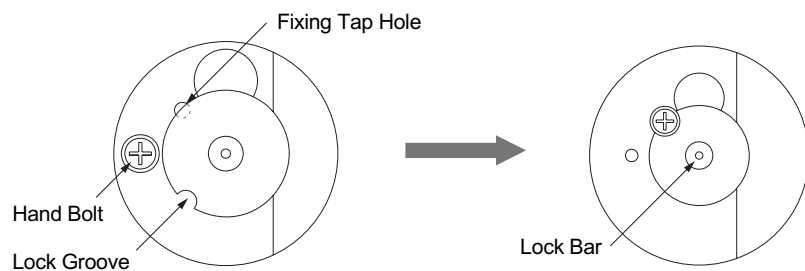
- (1) Remove the Bay Covers of the 3.5" (FDD) bay and the 5.25" (ODD) bays
- (2) Insert the ODD into desired 5.25" bay, and fix it in place with the Tool Free Bolts.
- (3) ODD Slot 3 & 4 and the FDD Slot require using Fixing Bolts (Bolt, M3x5) to secure drives.



4.6 Hard Disk Drive Installation



- (1) Open (raise to unlock) the HDD Lock Bar of the desired HDD Chassis Bay.
- (2) Slide HDD into desired Bay and close (lower to lock) the HDD Lock Bar behind the HDD.
- (3) To remove the HDD, open (roll up) the HDD Lock Bar above the HDD.
- (4) For transportation, lower the HDD Lock Bar and secure with Hand Bolts as shown below.

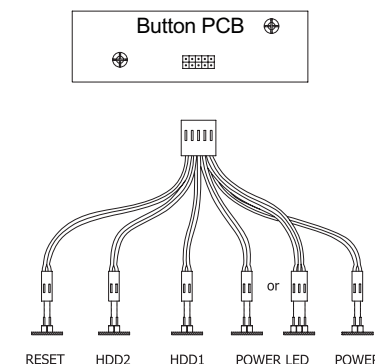


Note1) Excessive pressure may damage the HDD Lock Bars. Please take caution during HDD installation and removal.

Note2) Reverse the procedure for removal.

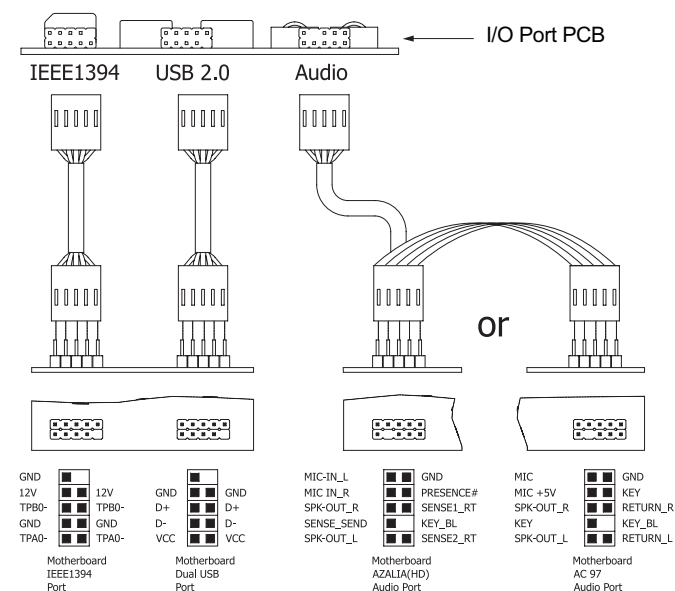
4.7 Cable Connection

※ Improper connection of the Power LED and HDD LED can lead to LED malfunction. Please refer to your motherboard's manual before making cable connections.



4.8 Front I/O Connection

Certain motherboards have different configurations for the IEEE1394a, USB2.0, and audio connectors from the one shown in the diagram below. Please refer to your motherboard's manual.



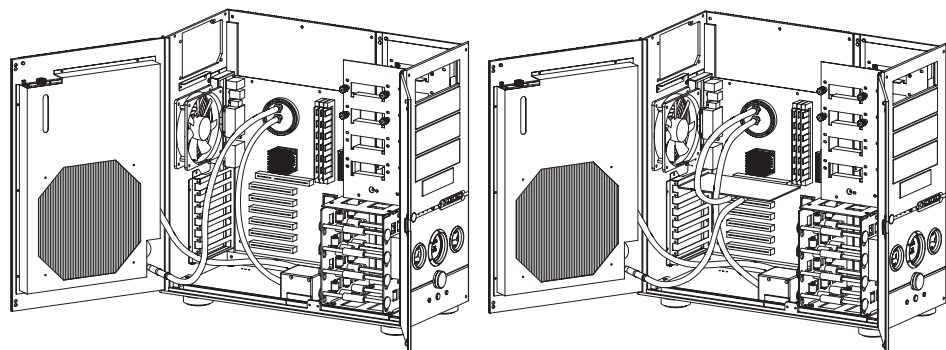
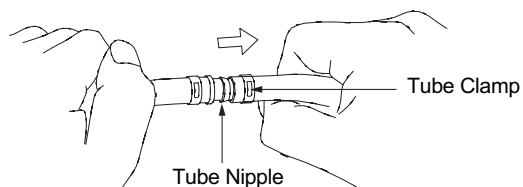
Note) Improper connections of the IEEE1394 connector and/or USB2.0 connector to the motherboard can result in irreversible damage so please refer to both the product and your motherboard's manual prior to installation.

4.9 Silicone Tube Connection

- (1) Please refer to the manual included with the CPU waterblock (ZM-WB5) for installation guides.
- (2) The user can add optional VGA and Northbridge waterblocks.
- (3) Use Needle - Nose Pliers to loosen and pull back the Tube Clamp on the tip of the Tube connecting the Water Pump's outlet to the Tube Nipple, then disconnect the Tube from Tube Nipple.
- (4) Connect the tip of the disconnected Silicone Tube to the Inlet of the CPU Water Block and secure with the Tube Clamp.
- (5) Use the separately provided tube to connect the CPU Waterblock's outlet and join with the Tube Nipple from of step 3.
- (6) After the Silicone Tube installation is completed, please check for tensile forces in the tube by repeatedly opening and closing the side panel. Please adjust the Tube length to prevent tension in the Tube.
- (7) If optional VGA/Northbridge Water blocks are, please repeat the "tension test" and adjust Tube the length as needed.

Note 1) Please do not apply Thermal Grease or Pads when installing waterblocks.

Note 2) Please refer to each product's manual when installing VGA/Northbridge waterblocks.

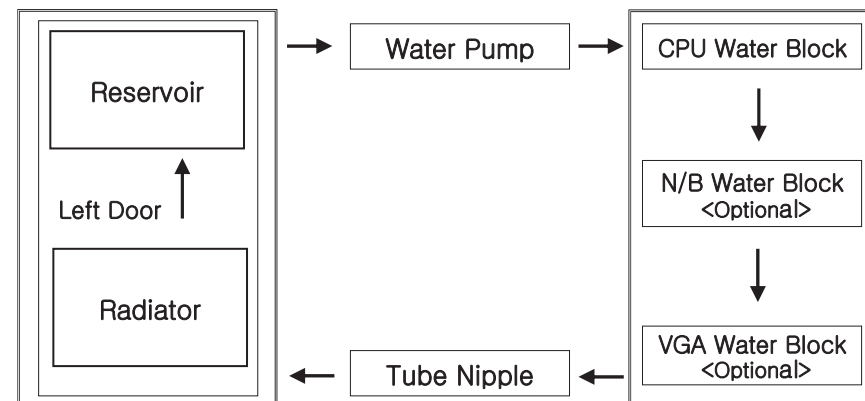


※ With CPU Water block installed alone

※ VGA Water Block installed with CPU Water Block

4.10 Installation Troubleshooting

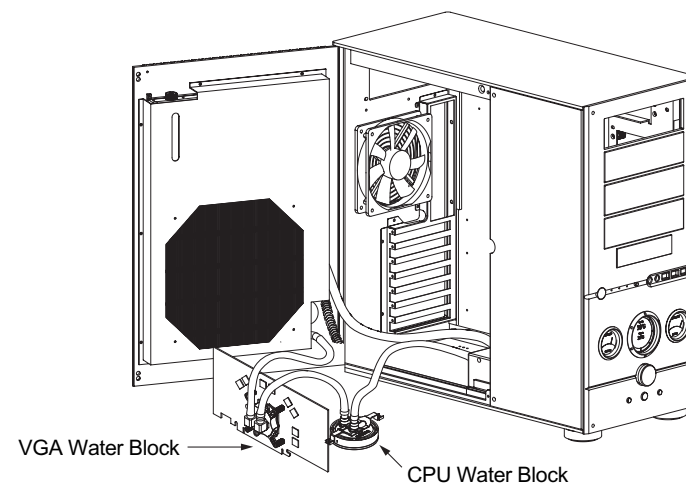
Refer to the diagram below as a reference for the coolant's circulation path/ order.



4.11 Water Block Removal

- (1) To allow adequate degassing, please disassemble the Waterblock's from the motherboard as shown below.
- (2) Skipping procedure will prevent adequate degassing due to internal pressure within the Tubes.

Note) Please place the Waterblock's at or below the height of the pump for the degassing procedure.



5. Leakage Inspection and Test Run

5.1 Adding Coolant

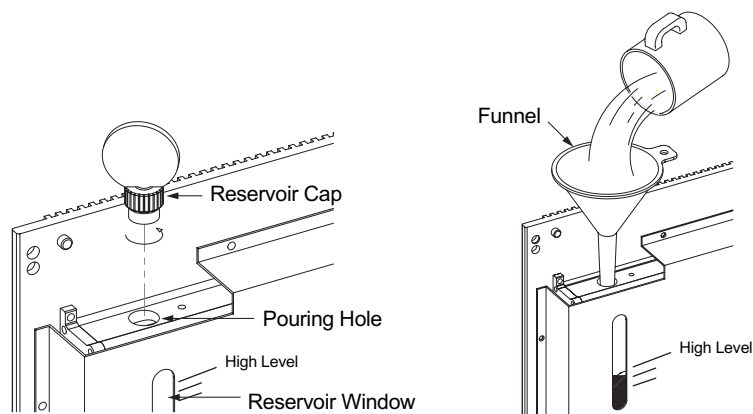
- (1) Remove the Reservoir Cap by turning counter-clockwise.
- (2) Mix half 125cc of the provided coolant 250cc with 500cc of distilled water in a container.
- (3) Secure the Funnel in the Pouring Hole and carefully pour coolant up to the Reservoir Window's "High Level" mark.

Note 1) Please prevent coolant spillage by carefully pouring with the provided Funnel. Coolant Level will drop when the coolant begins circulating. please pour additional coolant up to the "High Level" mark.

Note 2) The provided coolant is a concentrated liquid. please dilute the coolant with distilled water in a 1:4 ratio.

Note 3) Read the warning label on the coolant's container prior to use.

Note 4) Keep the LQ1000 and its components away from children.

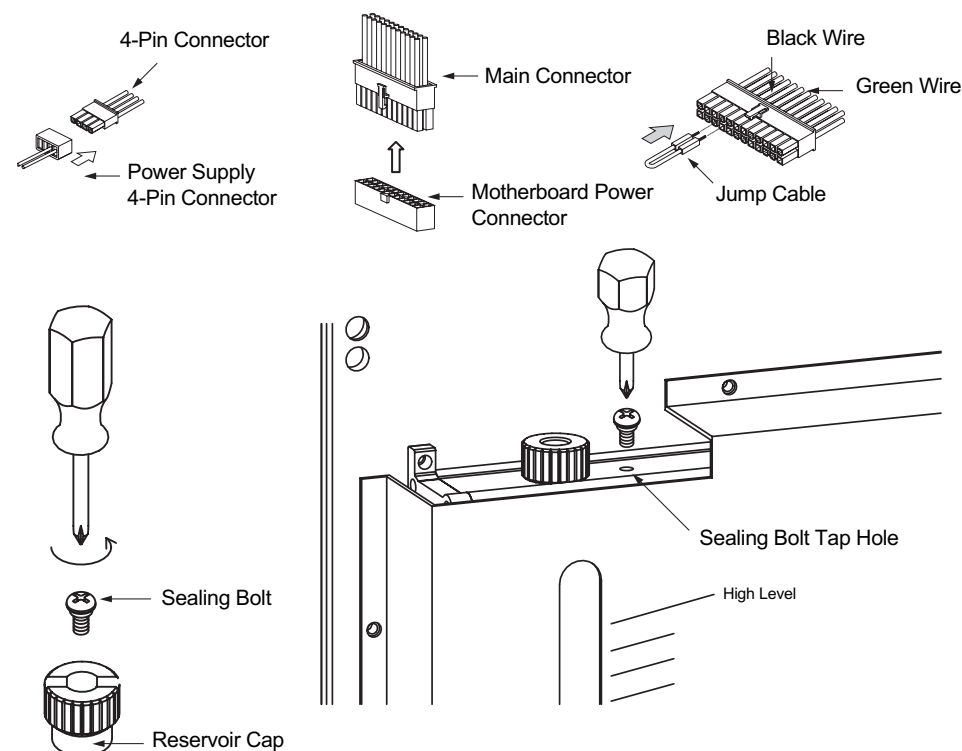


5.2 Coolant Circulation

- (1) To provide the necessary power (12V DC) for your Test Run and Leakage Inspection, please disconnect the PSU's Main Connector (20P/24P) and 4-Pin CPU ancillary connector from the motherboard and use the provided Jump Cable to connect the Main Connector's (20P/24P) green wire terminal to a black wire ground terminal.
- (2) Connect the Display PCB's 4-Pin power connector and the PSU's 4-Pin connector.
- (3) When power is supplied, the front panel display/gauges will light up red and the Left Door' Flow Indicator will light up blue with a spinning impeller.
- (4) For discharging of gas and good coolant circulation, turn the Power Supply ON/OFF approximately 3~7 times at 10 second intervals.

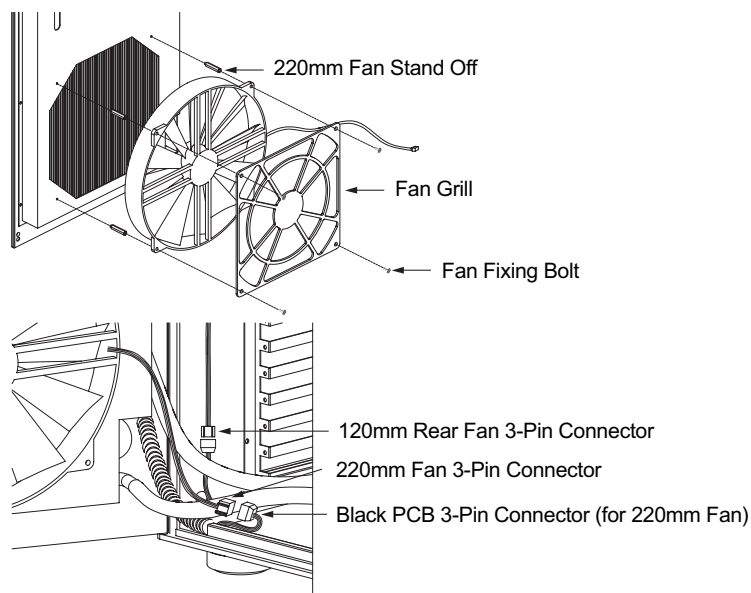
- (5) Check for leakage at each inlet/outlet. Leakage can lead to short-circuiting and/or damage to the motherboard or other components. If leaking is discovered, turn OFF the power, completely remove any leaked coolant, and reassemble the leaking section.
- (6) Coolant Level will drop when the coolant begins circulating. Please pour additional coolant up to the Reservoir Window's "High Level" mark.
- (7) After degassing is complete, detach the PSU's power connection. Use a coin-like object to secure the Reservoir Cap to prevent leaking.
- (8) Lay the LQ1000 on its right side
- (9) Reinstall the Water Block that were removed from the motherboard for degassing.
- (10) Connect the PSU's Main Connector and the CPU 4-Pin Connector to the motherboard.
- (11) To prevent coolant leakage the LQ1000 Must be set upright on its feet before proceeding with the next step (12).
- (12) After setting the LQ1000 upright on its feet, remove the Sealing Bolt from the Reservoir Cap and secure the Sealing Bolt in the adjacent Sealing Bolt Tap Hole.

Note) Cable organization is necessary to prevent interference with tubes when the Left Door.



5.3 220mm Fan Installation

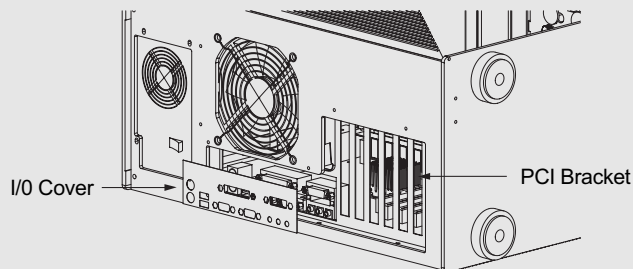
- (1) Install the provided 220mm Fan and Ffan Grill as shown in the diagram below.
- (2) Connect the 220mm Fan's 3-Pin Connector to the Black 3-Pin Connector.
- (3) After the Fan is installed, please be cautious to prevent inference between or among Tubes and/or cables.



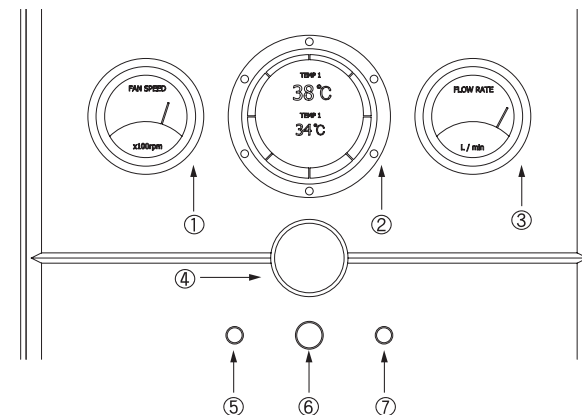
Performance Tip!

※ When not using the 220mm fan

- Make sure the side panel is securely closed for a quiet computing environment.
- Sealing off the I/O cover and PCI Bracket (with tape etc) will optimize the cooler's performance



5.4 Front Panel Display



① Fan Speed Gauge

- Display the 120mm Rear Fan's rotation speed in real-time.

② FND (Flexible Numeric Display)

- Temperature Display: Coolant Temperature (upper display), Ambient Temperature (lower display)
- Coolant Level Sensing
If the coolant level drops below a threshold level, an alarm will sound and the display will flicker. Please refill with coolant, if the display flickers.
- Coolant Temperature Sensing
If the coolant's temperature reaches above 60°C(92°F), an alarm will sound and the FND Display will flicker. If the flickering is observed, please check for problems.

③ Coolant Flow Rate Gauge

- Displays the coolant's flow rate in real time.

④ Control Knob

- Controls the Fan Speed and Coolant Flow Rate.

⑤ Temperature Mode Button

- Sets the temperature display to Celsius(°C) or Fahrenheit(°F).

⑥ AUTO/MANUAL Button

- AUTO Mode: Automat fan speed and coolant flow rate.
- MANUAL Mode: Allows the user to manually adjust fan speed and coolant flow rate.

⑦ LED/RESET Button

- LED On/Off: A short press turn the displays' LED's On & Off.
- RESET: A long press for at least 5 seconds resets the cooling system.

Zalman Computer Noise Prevention System

Stable performance and a noiseless liquid cooling system can both be achieved with the use of Zalman's Ultra Quiet Power Supply, VGA Water Block, Northbridge Water Block and Super Thermal Grease.



Ultra Quiet Power Supply



VGA Water block



Northbridge Water Block



Super Thermal Grease

Dual Heatpipe Cooled Modular Power Supply



ZM850-HP



ZM1000-HP

- Dual Heatpipes Installed for Maximum Cooling Performance and Ultra-Quiet Operation
- Improved Power Factor & Reduced Harmonics through Active PFC
- High Efficiency Design and 80 PLUS Certified
- Supports ATX12V CPU 4-Pin and EPS12V CPU 8-Pin
- Gold-Plated Terminals & 16AWG Wires

HTPC Enclosures



160XT-PLUS

- Designed for High TDP Processors
- Designed for High Performance Power Supplies
- Designed for Optimal Graphic Card Performance
- Designed to Maximize HDD and LCD Lifespan
- The front panel DFSTN LCD provides user access to various features such as the Graphic Equalizer, Volume, Power, HDD Operation, Time etc
- Sliding HDD and ODD Chassis provide easy installation and removal.

For more information, please visit our website.